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ABSTRACT

A phenomenological research project examined a holistic school in Ecuador and a creativity methodology program in Vietnam. The educators in these programs have dedicated themselves to implementing a holistic and humanistic vision and philosophy of education in their teaching practice. The study demonstrates how they have successfully created a caring, nurturing, and nourishing learning environment where learning to live and to create, living to transcend, appreciating relationships, and educating for peace are modeled and fostered. In-depth interviews were conducted with eight educators at Colegio Integral in Quito, Ecuador, and with the founder of the Center for Scientific and Technical Creativity (CSTC) at Vietnam National University in Ho Chi Minh City. CSTC teaches creative problem-solving techniques to adults. The themes and patterns that emerged unfolded as an interwoven web of knowing, doing, being, and becoming. That is, the four most important dimensions of holistic educators were the integrated knowing of the self, the academic subject, the students, and the world; the harmonious doing to create a nurturing learning environment; the genuine being to serve as authentic modeling; and the ever-evolving becoming that seeks the deeper meaning and larger purposes of life. (SV)

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Fan Yihong

Paper presented at the Annual Meeting
of the Comparative and International Education Society (CIES)
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Learning from Elsewhere: Portrayal of Holistic Educators in Ecuador and Vietnam
Paper for 46th CIES (Comparative and International Education Society) Annual Conference, Orlando, Florida

Fan Yihong,
University of Massachusetts, Amherst
March 6-9, 2002

This paper describes the phenomenological research the author conducted in a holistic school in Ecuador and about a creativity methodology program in Vietnam. Through cross-case synthesis, the paper portrays an integrative, evolving, dynamic and uplifting journey through which the educators integrated their knowing, doing, being and becoming. These educators gained a clear consciousness that education needs a holistic worldview. They have been dedicating themselves to implement a holistic vision and philosophy of education into real life teaching and learning practice. The study demonstrates how they have successfully created a caring, nurturing, and nourishing learning environment where loving for life, learning to live and to create, living to transcend, appreciating relationship, and educating for peace are modeled and fostered.

Overall Approach and Rationale

The overall research design was a phenomenological approach, one of the methods of qualitative research, and case studies. The phenomenological approach enabled me to explore the life-world stories of the educators, while case study method provided me the means to learn how the individual educators made contributions to organizations and to examine the process for organizational change. Since the primary interest of this research was to explore people's life-world experiences, a phenomenological approach fits the task, as William Earle (1966) maintains in his article *Science and the Philosophy of Science Cannot Examine Life as It Is Lived* that a domain in which the methods of natural science are inapplicable, the domain of our own lives so

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long as we are alive, and alive for us, not for the external observer and this domain is accessible to us in the form of reflection rather than observation and experiment.

To access the domain of life-world experience of holistic educators I selected eight educators who have experienced transformative consciousness and who were willing to share their lived-experiences and life-world stories as participants in phenomenological in-depth interviews for the research. The mode of the interview was exploratory and the report of the interview was descriptive, showing how the participants in the interview reflected and accounted for their own experiences and consciousness. I have lengthy descriptions of the two primary research participants, Mario Solís Guerrero in Chapter 4 and Phan Dung in Chapter 5. In addition to the primary research participants I also selected 6 teachers and one coordinator from the Colegio Integral, Quito, Ecuador as participants for my interview. Figure 3.1 provides the profile of the teacher participants whose story I included in the dissertation:

Name	Age	Class	Length at the School
Edith	40s	3-year-olds	12 years
Xavier	late 20s	5th grade	2.5 years
German	30s	11th grade	7 years
Victoria	50s	12th grade	14 years
Denice	late 30s	12th grade	4 years

Figure 1. Profile of Research Participants

The secondary interest of this study was to explore how individual awareness leads to innovative and transformational collective or organizational change. For this purpose I used case study methods, which allowed me to present descriptions of a collective group or organizational history, organizational development and the ways organizations respond to critical issues and incidences. This method enabled me to explore how people act when facing crisis and what internal and external factors contribute to organizational development, transformational change, or failure at certain stages. The case study was focused on small-scale groups and projects rather than what

happened at the societal and cultural level. The following describes the study of the two cases and the findings of the study.

The Study of Colegio Integral, Quito, Ecuador

Thanks to Mario and Sonia's openness, hospitality and Gabriela's careful arrangement, I went to Colegio Integral, Quito, Ecuador in January 2001 for my field research. In the three-week' unforgettable experience there I learned what an integral school is like and how Mario, Sonia, the administrators, faculty, staff and students there have been living their ideas of humanistic and holistic education in their educational practice.

My first visit to the school was on Sunday. I was greeted by such a unique beauty and genuine style of the school. Walking on the pebble-paved road, stimulated by walls painted in orange, I entered the school's reception area, which was elegantly designed to demonstrate the school's value, vision and mission. The walls of the lobby are painted in bright orange, showing the vigor and energy of life. The counter area is painted in blue, displaying the connection with nature. On both sides of the wall there are framed posters of the school's vision and mission, loving life, and learning to live. The reception section is gracefully laid out with the school's logo on the wall. The clock is also in the design of the logo (See Figure 2).

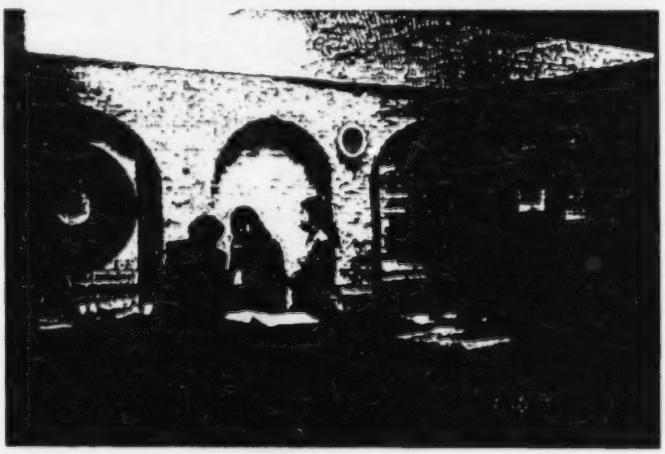

Figure 2. Reception area of Colegio Integral, Quito, Ecuador

A beautiful garden leads you from the reception area to the other part of the school with the administrative building at the back, school cafeteria in front, another beautiful garden in between and the classrooms in the shape of geodesic dome at the far end. The classrooms are painted in blue and white. The unique shape of the classrooms expresses the style of the school. The round shape of the classroom generates more energy and more effective learning, according to Mario Solís Guerrero, the designer and the founder of the school (See Figure 3 and 4).

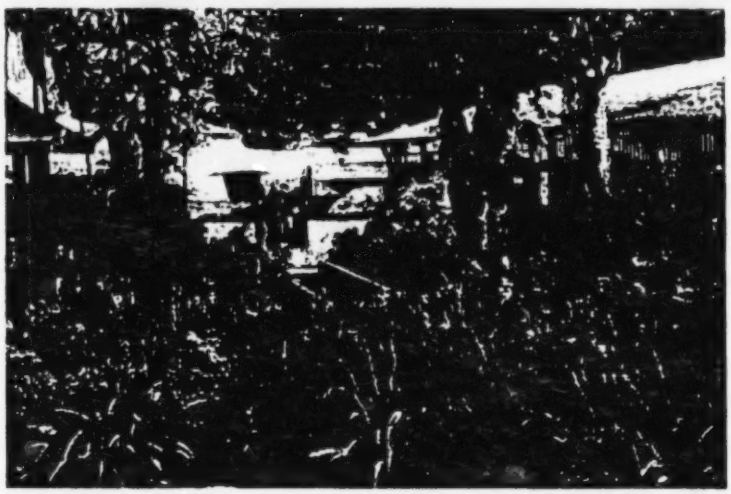

Figure 3. School garden and geodesic classroom at the end

Figure 4. Geodesic classroom at the end

The school's playground is at the left of the classroom area. On the wall of the playground you can see students and teacher's artwork all along the wall. At the corner of the wall, you can see a tree planted in memory of a student who died in an accident (see Figure 5).

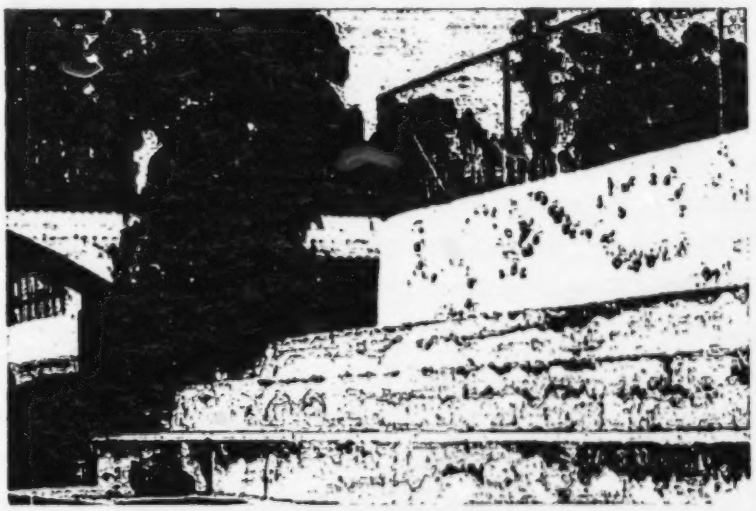

Figure 5. Tree at the corner of the school playground

Turning the corner of the administrative building, we enter the preschool section, where you see a beautiful lawn and playing facilities in the yard. The whole school is like an enchanted

garden. By simply walking through it you feel the joy of life, the spark of spirit and the serenity of the soul.

When I returned home I told Mario (Thanks to their hospitality I stayed with them in this precious three weeks) how I enjoyed visiting the school and how beautiful it was. His reply was very revealing: "If you visit the school during school days and seeing children on campus it will be even more beautiful."

Mario and The Colegio Integral

Colegio Integral, to the time when I was there, has been operating for twenty-three years since 1978. Mario Solís Guerrero is the principal of the school and the founder and architect designer of the school, both physically and philosophically. Sonia Plaza de Solís, Mario's wife, is the general supervisor of the school. For twenty-three years their partnership makes the school develop, grow and thrive, from a school of sixty-five students when it started to three hundred and fifty this year. The students' ages of this school range from two to eighteen.

Being trained as an architect, Mario was very successful early on in his career both as an architect and an educator. His first artwork won the first award in 1961, in his freshman year, in a college contest when he was at the Universidad Central Del Ecuador. His first architect design was on display before he graduated from university in 1963. Because of his excellence in his academic work, artwork, and architect work, he was nominated to be professor right at his graduation.

Becoming a professor right after college, Mario gave ideas about how the curriculum should be changed and was given the job to reform the curriculum. He was one of the creators of The College of the Architecture and developed the whole curriculum for The College of Architecture. From 1973 to 1977, he was nominated to be the academic dean of the college, as well as the representative of the university assembly. He was the last nominated member of the representative and the youngest dean at the time, because later the university assembly stopped

functioning for some political reason. While all other deans were in their fifties, he was only thirty three. He served two terms until 1977, when he had a strong desire to establish a school where he could educate children with a holistic and humanistic view from their very early age.

When asked why at the peak of his university academic career, he wanted to switch to establish a school he said he wanted to carry his ideas of holistic and humanistic education to the education of children. Through all the years of his study and his teaching, he was influenced very strongly by two themes, one is the holistic view, and the other is the humanistic view. He always wanted to implement these two themes into his teaching and educational programs. When he reflected on his college study, he realized he started to facilitate learning while he was a sophomore. Though he enjoyed his freshman year at college, the second year he realized there was so much more students could learn and do. He and a group of friends formed a study group. They met regularly and supported each other in their study and research. Years later, three of the six members of the group became academic deans. During all the process of group learning and later in his university teaching and facilitating work, he took the lead. So he realized that he wanted to be a leader in education.

When he reflected on his own education he realized, he did not have very good experience at elementary school. Now his daughters were facing the situation of elementary education. He was very concerned about how his daughters and the children of their age could have the chance to receive holistic and humanistic education. Since he had already developed a very strong vision for holistic and humanistic education, he thought the best way was to establish a school so that he could bring his vision to reality.

After two years preparation, he founded The Colegio Integral in 1978 while he still kept his job at the Universidad Central Del Ecuador in Quito. Sonia takes care of the daily management of the school. At the inception the school was operated under the guidance of holistic and humanistic

principles as Mario envisioned. During all this twenty-three years, while the philosophical foundation, vision and mission of the school have grown to be stronger and stronger, the strategies and methods in faculty development and curriculum planning and designing are being constantly renewed and updated. As the result of the twenty-three-year conscious effort and constant development and growth, anyone visiting the school can sense the uniqueness in the air, in the climate and the atmosphere of the school.

Mario's Journey from Cosmic Awareness to Holistic Worldview

When asked how he developed a holistic worldview and a holistic view of education, Mario gave a vivid description:

> I remember I could see the first relevant memory was when I was three years old. I had a dream that was repeated several times. I slid in a very huge, maybe infinite chute. The feeling was very pleasant. It was like in the cosmos. That was my first feeling of wholeness.
>
> When I was a boy, I was very sensitive. I was very open and receptive to the feelings of others and concerned with my happiness and pain and the happiness and pain of others. I see myself as a very sensitive boy towards human and towards all living things like plants and animals. I think it is important for my development. And now I can see it was a feeling of compassion.
>
> Afterwards I realized that I feel connected with people around me and living things around me. I feel a strong sense of connection between myself and the environment. When I was a teenager I started reflecting about my inner self. I found the subjects of philosophy and psychology interested me very much because they help me to find answers to life.
>
> When I was a boy, I also liked very much for creating things. I created my own toys, stories. I created fiction characters.

He said humanism and holistic view were two themes influenced him through his years of study:

> When I was at college I had two main topics of interests. Because after all the process of designing and building of houses I was more and more interested in the people who were going to live in the building to be sheltered here. The other is the integral architecture. Because the building, the object is not isolated. It is connected with people, social environment, and natural reality. The other parts also connected with the object, the building. That's how I developed the method of holistic architecture, taking into account all the aspects, not only the technology of architecture. So this I

> give these two topics two names. The first is the humanism and the other is integrality and wholeness a sense of totality. When I linked these two aspects to the houses I built what I developed was integrated humanistic architecture. At the same time I discovered that art was a way to express my feelings and my sense of connection. Therefore, my first artwork appeared in an Art Exhibition in my university in 1961, my first year at college. It was in a contest. I received the first award.

Mario also talked about how he discovered art as a way to express his senses and his feelings at college. He said:

> My artwork shows the connection between humanism and integration. The humanism and the integration that appeared in my artwork not necessarily in an evident way, for most of my artwork have been abstract. The integration of my artwork not only displayed in the topic but also in the materials I use. Artwork expressed the connection between human and something bigger.

While he was talking, he pointed to an artwork hanging on the wall, and started a very interesting conversation among us three, he said:

> For example, the artwork here is the Sun of the Happy Warmth. Now I can see the sun as a bigger totality, but the warmth, is not only as the soil but also as ourselves being warmed by the sun. For years I thought the sun is here. But now I realized there are little suns here. It's not easy to explain. It was an intuitive way of doing. I have not realized the little suns within the bigger sun until Gabriela pointed it out.

When I told him my immediate understanding of the warmth illuminated from the painting, I thought it not only represented material warmth but also spiritual warmth. I thought the bigger warmth needed a lot of people to contribute. For me this artwork shows small warmth of different people joining together to form a bigger and more vast warmth of the human spirit. He continued:

> This is a way of being aware of the integrity and the wholeness, the connection. Because through this artwork, I can see something, Gabriela can see something, and you can see something, all parts constitute the totality. In this way all us three are connected.

Later when talking about different authors who influenced him in establishing holistic worldview, he mentioned, Eric Fromm, Krishnamurti, Buddhism and Taoism.

In a later interview session he summarized the essence of these authors in a very succinct way:

> Taoism offers the holistic view of the world, the yin and yang. Krishnamurti stresses the conscious of the present. Fromm emphasis the importance of being instead of the having and doing. His vision is love for life. Buddhism focuses on compassion, the being of here and right now, living life as a continuous meditation, and the fluidity.

> From all these thoughts about education one thing I found constant is education for life.

When he developed the curriculum for The College of Architecture, he incorporated strong ingredients of the holistic and integrative view. When he did the planning of architecture design, he identified three elements, first physical, second social and the third individual.

> In the process of creating a method for planning, I identified three elements, first physical, second social, and the third individual. In this physical environment, I identified the natural and the cultural or built environment. So this integrated vision helped me develop the method of planning, this method also helped me to develop the philosophy of the school. The center is the development of the human beings.

Here we can see how the logo of the school came into being. It was originated and developed from the Taoist yin-yang symbol closely related to the vision, mission of the school. The ever-evolving, intertwining parts are the nature and the universe with the development of the people at the center (see the school logo in Figure 1).

From Individual Vision to Collective Vision through Authentic Modeling

The next part of our conversation revolved around how Mario transformed his individual vision to a collective vision of the school. When he summarized what sustained his own vision and mission, he attributed this to his personal development sustained by love and spiritual energy, as well as his inner strength and discipline. He cited Plato's statement: The search of the totality is love, and saying that inner discipline comes from his love for life. It was the process of self-accompany helps him to tune in with his essence, his fountain and source of wisdom, energy and life.

When he talked about how he achieved to transfer his vision of the school to become the collective vision of the faculty, staff and administrators and the students, he said it was through authentic modeling:

> I pass on the vision and the mission of the school through authentic modeling. First I tried to be a leader of my own life and my own being. So what I say and what I do does not come from an idea or a thought. I tried to model and to show what I expect from others. All that I have learned I tried to extend to the other people. So that's the

> power of what I have been living. In that process I always try to stimulate the self-esteem of the other persons. When they criticize and judge themselves. I try to help them selves to appreciate other aspects. I try to implement the principles of the school as I live.

This reminded me of my interview with a young teacher at the school. He said the first time when he had an interview with Mario when he applied for the job he knew Mario was the person who lives what he thinks. He said he did not feel any hierarchy, any uneasiness; what he felt was that he was facing a genuine human being who was so encouraging, understanding and reassuring.

At this point, Mario gave a very succinct comment on what he thinks to be an integrated person and how he wants the students to understand it:

> All that I tried to do is to live according to what I think. I believe that there must be a congruence of all three levels of self, the intimate, the private, and the public. Intimate means the very inner self, while the private more related to family, and the public is more related to formal life. I don't think it is good for people to have split personality in these three parts. That's the part I want the high school students too understand. When they ask what do I want to get into their private life. I tried to let them understand that everything is their life. Everything has an impact to the other.

When I told him about some American professors don't even answer students questions after class, because it was considered their private time, Mario said that's the fragmentation of their lives. Then he started to talk about how teachers teach two curriculums, one is about the subject, the content and the other, the hidden curriculum is about what a person the teacher is, his or her behavior and his or her relation to others:

> When I remember my time in school I remember not what they taught me. Instead, I remember them as human beings. The value they taught me that we share. That's why teachers not only teach in classes but out of classes. That's why teachers need to be with students in other places, in the cafeteria, the playground or the sports ground. Students absorb more form the hidden curriculum than the formal and evident curriculum.

The next section explains how Colegio Integral implements a strong faculty development program.

The Tree of Self-Fulfillment: Personal and Professional Development of Facilitators

That raised the question of faculty development. Since teachers trained from conventional college and universities do not naturally develop a holistic vision and holistic view, it is very important to design and carry out effective teacher training or development programs at the school. So Mario prefers to use facilitators rather than to use teachers because the term, in conventional sense, sometimes only means passing down knowledge. He would like to use the term *facilitators* to mean they are here to facilitate holistic education and the holistic development in students. In fact, I think the facilitator development program is a very strong component that contributed to why this school can align all the teachers, staff, administrators and students with the vision and mission of the school. Every summer before school starts all faculty members have three weeks of workshop for facilitator development. The metaphor Mario used to describe facilitator development is *the tree of self-fulfillment*.

The first part is the root of the tree, which is invisible, corresponding to the personal and interpersonal growth of the facilitators. This part is emphasized in the faculty development workshop through experiential learning.

The second part is the trunk of the tree, and branches and leaves; this relates to the professional development of the facilitators. This is achieved through workshops, seminars, and research within the school or outside the school.

The third part is the flowers and fruits, which is the students' performance as the result of the teaching and learning from the school. This is more tangible and visible. It is how ideas are practiced in the real life teaching and learning. Mario gives more descriptions:

> We could observe in the students achievement. This last process is followed by the observation and feedback of their performance, given by coordinators, principal and

vice principal. It can also be given by peers. There are three words correspondent with the three elements of the growth of teachers.

First—integrity—personal and interpersonal growth

Second—competency—professional

Third—effectiveness—performance

With this we have realized very clearly if we want the fruits that is the effectiveness. That means to achieve the result of holistic education it is very important to work on these two parts, the human part and the professional part. In those parts there are also problems that we need to work on. This is the how of the development of facilitators. Then talking about organization from the process from within to the outer we try to align the organization with the vision and mission of the school, so that everyone know where we are going and what is our work. That is how we try to empower the facilitators through an agreement of mutual benefit in which we put the result we want to achieve. This result is about the students. In this organization we synthesize what we call integral, international curriculum of holistic education for peace, which is almost everything, including our wider ideals, goals, and the ways of implementing and assessing.

When talking about strategies and methodologies used for school management, Mario said that his trick was to pick up what the business world is doing, because the society put business first and education last. So he went to workshops and seminars, where they train business leaders, and then he could come back with the most up-to-date strategies for organizational development. He gave an example about a workshop on *Seven Habits of Highly Effective People*, where he was the only educator while all the others were business people. He used Peter Senge's *The Fifth Discipline* and Total Quality Control. All these helped him to develop the school to be a successful learning organization, where they keep renewing their strategies and methodologies to achieve the best of the result.

We see our organization as a system. We see all the processes as the process within the system. We have in the process the three main elements, planning, implementing, and achieved results (evaluating). We try not to use the words as objectives, or goals, but use desired results. (Fan: That's exactly like what I learned from the Russian creativity theory. It's now all coming together).

These achieved results are assessed compared with the desired results. Then from this process of assessment, we take certain solutions and decisions then we go again to the planning. It is a continuous process and we see in time as a spiral, and always going to a higher level.

When I told Mario that my observation at school did not see hierarchy, I asked him how he managed to build an organization without hierarchy in a society that values hierarchy, his answer was the following:

> By facilitating the participation of people, appreciating their approaches and listening. For example, yesterday, I wrote the letter for the students. If this is the hierarchical organization I would have given to the coordinator, and the coordinator gave to the teacher and the teacher gave to the students. But I did not do it that way. Instead I went to every classroom, sitting in a circle with them. I read the letter, and then I listened to each one of them of what they said. I would give them answers when they have questions, valuing each of their opinion and ideas. In this way I reaffirm each one of them as human beings. In this way I was satisfied and they gave me thanks. I never reject to speak with anyone. I always find time to listen. Sometimes it is a problem for me because I have to interrupt what I have been doing in order to meet and talk to people.

When I asked him how he builds trust and how to make the school's vision as everyone's vision? His answer was:

1. Being authentic. Keep my own integrity. Modeling what I expected from others.
2. Empathy. Trying to understand the other person even if I don't agree.
3. To accept the other person unconditionally. This does not mean that I accept the inadequate behavior. But I separate the identity of the person from their action. This is a healing way of approaching behavior of conflicts. The students or persons are tied to the action. You don't mix behavior with a person. Remember not to say you are a bad boy, etc. If you separate the behavior from the whole person you give the person relief and a possibility for change.

He believes that:

The fruit of love is peace.
If you want peace, love life.
Therefore our main principle is love for life.
Our vision is to educate for peace.
Love and truth heal and educate.

The author also interviewed students and faculty in Colegio Integral and gathered wonderful stories about how each one of them experienced the journey from understanding of a holistic worldview to bringing about a holistic education. Details can be found in the author's dissertation. For this paper I am more focused on describing Mario's journey. In the next section I

am going to talk about the journey of a Vietnamese professor Dr. Phan Dung who have been teaching creativity methodology to people's of all ages for the past twenty five years.

No Boundaries: Prof. Phan Dung, Mr. Altshuller, TRIZ and CSTC

Thanks to Steve Rodman, one of the founders of the Altshuller Institute for TRIZ Studies, I got a chance to know Professor Phan Dung, the director of Center for Scientific and Technical Creativity (CSTC), College of Natural Science, Vietnam National Univesity— HoChiMinh City. I felt so fortunate and honored to have known Professor Phan Dung because he is such a wonderful person who demonstrates profound humanity and an inspiring spirit. Though my first stage of communication with Prof. Phan Dung was through the inter-net, the openness and support I have received from him was enormous. As soon as he learned my interests in using his programs and his work as a case study in my dissertation research, he spent a weekend to put all his articles in English on to his website so that I could click and read all of them right away.

At the time there were several of his articles published in European journals, which he did not get permission to put on to the web. Instead, he sent me an email message saying that he was mailing more articles to me. Thinking it was from Vietnam I expected to get them in about two weeks. To my great surprise I got them in three days and was astonished to find that he sent them by express mail. I was so moved by his readiness to support my study and his willingness and initiative to provide me with so many materials about his work to help me with my study. Later, after I read Professor Phan Dung's memoir of his experience with Mr. Genrikh Saulovich Altshuller, I found out both these two persons are great teachers. They offered unconditional support for every learner they encountered along the way, no category limitation, no inside versus outside, and no boundary concerning who will receive what kind of communication. From their stories anyone can sense the profound, unconditional love and compassion of humankind.

In fact, my encounter with Professor Phan Dung was like a strange attractor at work. I started to be interested in creativity, systems thinking and strategic planning in 1990 when I was planning English extra-curricular activities in my university in China. At that time I read only one book on creativity in business management, one article on strategic planning, but the grasping of the essence of these two readings provided me with the approach and the structure of the program, which later evolved, developed, and improved over time to be a very successful campus wide program. When I visited the U.S. in 1997 on an American Study program, I tried to check if there were more resources on bringing creativity into the college and university curriculum.

During that trip a friend introduced me to Steve Rodman who had been helping a group of Russian people promote TRIZ (TRIZ is the Russian acronym for Theory for Inventive Problem Solving, which was developed by a Russian expert, Mr. Genrikh Saulovich Altshuller, as the result of studying thousands of patents in the 1940s) teaching in the U.S. Steve gave me the first TRIZ book they translated from Russian into English and published in the U.S. in 1996, *And Suddenly The Inventor Appeared: TRIZ, The Theory of Inventive Problem Solving*. I was instantly fascinated by the TRIZ theories and implications of bringing it to an educational arena. I translated the book from English to Chinese during the summer of 1997. But as my life radically changed since then I was not able to polish it and get it published before I came to the U.S. to pursue my graduate study.

When I started my study I was dismayed to find that there was no current course in the School of Education related to the study of creativity. I found one course related to creativity in the School of Management and took it. The theory was well developed but the way of teaching was not creative enough. I really wish I could experience truly creative programs on bringing creativity to a wider audience. My luck came in the fall of 2000 when Steve gave me one of Professor Phan Dung's articles on introducing his programs of TRIZ and creativity methodology in Vietnam. I

contacted him immediately, thus started our correspondence, which led to our meeting here in the U.S. in April 2001.

In my dissertation I devoted a whole chapter describing Professor Phan Dung's journey encountering Mr. Altshuller who developed TRIZ, Mr. Altshuller as a teacher and life-long mentor, his impact that shaped, to a large extent, Professor Phan Dung's life and purpose, and Professor Phan Dung's efforts in promoting TRIZ in Vietnam. Since the length of this article is limited I am focused on how Professor Phan Dung integrated educational ideal and creativity through his work at CSTC.

Professor Phan Dung and His Work at CSTC

From teaching creativity methodology in 1977 to establishing the Center for Scientific Technology Creativity in 1990 onwards, in this period of twenty-four years the work of Professor Phan Dung on promoting TRIZ and creativity methodology teaching flourished. The following is Dung's own summary of the work:

> The first course on creativity methodologies (CM) was created and taught by me in Vietnam in 1977 (Phan Dung, 1994). We have divided the CM program into three levels: basic, intermediate and advanced courses. Some main traits and the content of the basic CM course were reported in detail (Phan Dung, 1999). We took TRIZ (the Russian acronym for Theory of Inventive Problem Solving) and its sources as the core of the whole CM program. TRIZ's fundamental ideas, tools and facts were presented rather well in the world (for example, Phan Dung, 1983 to 1998, see also references in these books and papers).
>
> By March 2000, we worked with more than 7,000 participants. Among them there were high school and university students, teachers, workers, engineers, scientists, managers, lawyers, physicians, pharmacists, dressmakers, artists, sport trainers and so forth from all economic and social sectors. Their ages range from 15 to 72, education level from year 9th graders to Ph.D.

Since CSTC has to be self-sustaining, Professor Phan Dung manages the programs and the center in a very Taoist way. In order for more people to be able to come to the programs, Professor Phan Dung tries to keep the fees as low as possible. Only when the center earned a little more than its expenses would he start to train one more teacher for the center. By now, he has three other

teachers working with him. In this way we can see his patience in sustaining his program in a very successful way. Professor Phan Dung outlines CSTC's experiences and activities as the following:

1. There are many financial and other difficulties in Vietnam; everywhere money is needed. It is not easy to hope for funding from the state to perform our activities. We must first rely mainly on our forces, energy and enthusiasm to bravely enter a market. In other words, our Center has been working from the very beginning up to now as a self-supporting enterprise. We think, now the market has accepted us and our creativity methodologies program. Thus, we have been able to balance all our expenses during the process of growth of the Center.
2. The most important resource for every country is its human resource, and creativity is a human being's fundamental resource, so our creativity methodologies program should serve a great number of people. So we have built our program not associated with any deeply specialized knowledge of sciences or technologies for the public at large.
3. According to a Vietnamese cultural tradition everybody should learn not for money but first of all for becoming a human being, that is, education and training provide students with not only knowledge but also helping them to be good people for their families and society. So our creativity methodologies program is carried out not for the sake of creativity only but we also concentrate our attention on ethic side of a creative personality.
4. Our creativity methodologies program has the purpose to help participants become users of creativity tools in daily works and life. We have been convinced that only appropriate emotion can promote a human being to act in reality. So our program involves also examples, stories, exercises that may inspire such an emotion inside participants.
5. Our program emphasizes active participation and self-discovery. The participants make full use of self-study materials, instructor presentation, individual and group exercises and case studies. Throughout the program the participants have the opportunity to apply their newly gained knowledge, tools and skills in problem solving and decision making process. Audio and video equipment are used during the program.
6. Vietnam today has an income of 250 USD per capita. It is important for us to understand that if we want to spread creativity methodologies widely in our country, we should set a cheap fee for the course. Indeed, now the cost of the basic course lasting 60 hours and including textbooks is equivalent to 20 USD per participant. In spite of that we have a great satisfaction because we have such a strong desire to promote a development process in Vietnam.
7. Participants are very busy and diverse, so we cannot teach them for a long time and in one constant place. So we organize our courses at different times of the day, including evening courses. The Center also offers on-site training courses in and out of HoChiMinh City on request. Practically, we conducted some courses in Hanoi, Cantho, Dongthap and Tiengiang.
8. Creativity methodology is a new subject in Vietnam. Most people have not known about it, so we should foster its widest dissemination. In this connection, we provide introductory lectures, seminars, addresses on radio and on TV, schools, institutions, hospitals, companies, plants ... (many times free of charge) to describe the advantages of creativity methodologies. In addition to that, dozens newspaper articles, written by correspondents about our creativity methodologies program, our Center's activities and successes of past participants helped very much in this aspect.

9. Because of systems inertia in general and psychological inertia in particular a new subject like creatology could be too difficultly accepted by people at the command of administration. In our case, creativity methodologies courses were taught for the first period of time only to creativity lovers. After these courses proved to be successful, they became compulsory for all students of the given institution. Thus, now, our courses have been integrated in the general program for all graduate students at several colleges of Vietnam National University - HoChiMinh City.
10. For the present our research is focused not only on improving teaching and training methods, perfecting our creativity methodologies program where we have combined "Western", "Eastern" creativity methodologies and our culture but on elaborating on some topics to contribute to the development of this discipline in the world. By the way, I would like to say some words more about our program, although we teach at the same time the "Western" methodologies and TRIZ but we have devoted much time to TRIZ because of its very powerful advantages.
11. At the end of the courses, the general agreement of the participants was that the new discipline is very useful and necessary to all kinds of people. They also proposed that the course should be integrated in the general program of education for the whole country in order to develop the creative potentials of all people. Below there are some of my and their thoughts about TRIZ.
    - TRIZ in general and ARIZ in particular is a very powerful creativity methodology for solving inventive problems at high levels.
    - TRIZ is a helpful methodology to manage contemporary challenges such as fast change, increasing complexity, diversity and strong competition and to convert these challenges into opportunities.
    - Like any tool, the user not only uses the tool but the tool also influences the user. TRIZ brings the user many advantages such as:
    - A system of various multiple perspectives in accordance with the diversity of possibilities.
    - Increasing creative curiosity and observation.
    - Overcoming of psychological inertia.
    - Developing the use of imagination.
    - Identifying unity, similarity, analogy among objects, phenomena, processes... in differing domains.
    - Increasing sensibility in perceiving and processing information.
    - Helping logically to evaluate available creative solutions.
    - Having differing approaches to solve problems.
    - Knowing how to reveal, formulate and select the problem needing to be solved.
    - Knowing how to discover contradictions and to generate ideas for resolving them.
    - Predicting systems development, initiating and purposively carrying out this development.
    - Predicting failures and finding ways to prevent them (because any creation can be a double-edged sword)
    - Creativity methodologies are often used to improve and perfect external system, but in fact they can also be used and need to be used to improve and perfect human beings. In this aspect, TRIZ has a great potential.
    - After completing each basic course, participants were invited to write self-reports on the results the course had brought them. Thus, up to now our Center for Scientific and Technical Creativity (CSTC) has had thousands such a kind of reports.

The following excerpts from the reports of the former participants of CSTC programs display how they benefited from CM course at CSTC.

Participants Evaluations on CM Courses at SCTC

To illustrate, below I will describe one of my successful efforts I have since I finished the at the CSTC:

> Company Fujitsu sent over 210 Vietnamese to Japan for training. After they had been in Japan, one time per a week, the company arranged for some of them to talk with their families via television bridge. Once there was a technical problem: the participants could only see one another's faces without any sound. Our manager had decided to postpone the meeting. This meant that the families should return home and come back in a week. Among them there were many from very far provinces. Remembering the point "Using the intrinsic resources inherent in the given system" in the CM course, I came up with an idea: participants' talk on the international telephone of Fujitsu's net while seeing one another on the television screen. All the participants were happy. Because of this, I also felt happy.
>
> (T.T.T.C. - Employee, Company Fujitsu)
>
> My present job doesn't sound to be one that has anything to do with science and technology. With the tools that I have learned, I have made various designs of new blouses, some of which I find really good. Though I have no plan to become a fashion designer in the future this ability to design new models of clothes can help me become an owner of a well-known dress-making shop. Also, thinking methodically will help me work more efficiently with a program carefully envisaged from A to Z, with no redundant operations that waste my time. If I had attended the CM course right after I finished high school, my career prospects at that time must have been different.
>
> (N.T.M.D. - Dress-maker)
>
> Now things have become different after the CM course. I don't mean that it is sort of miracle. But undoubtedly, I do learn how to think in a more creative way, then I can save more time for more work. Now whatever work I take charge of, big or small, I view it as a problem. I use the new methods to solve it and I can do it faster. Good-bye to my old-fashioned way (the trial and error method). In my hospital, I have reorganized the rooms and medical devices, giving each of them more functions (the principle of universality) without ill affecting the treatment and order. I now realize fully that: Without methods, great persons can get lost; with good methods, ordinary persons can do great things.
>
> (N.T.Q.L. - Doctor)
>
> After the CM course, one of my successful efforts was making improvement in designing and packaging of our product by creativity tools. Except for that, in organizing the production process I made a change to a piece of equipment: a container full of products with a weight of 100 kg made it difficult for workers to

load it onto a cart, and then carry it to a steam-heated furnace. In fact the workers were able to handle a load of 70 kg (because 100 kg is too heavy for them), short of 30 kg. I applied the following principles: "Uninterrupted useful effect", "Dynamism", "Fragmentation" and "Joining". The container was divided into separate two, with 50 kg product for each. But once inside the furnace, the two halves were joined with special hooks, and turned into one container to be fitted to the furnace's power. Thus, the container always holds the content of 100 kg without any waste.

(L.C. - Deputy director, Beverages Company)

I am glad and very thankful for attending this extraordinary thinking course. After this course I now realize that contradictions could be united and should not be viewed separately. Instead of treating opposite elements as an attacking each other, now with TRIZ both are combined to resolve problem in "win-win" situation.

... ...

(M.H.Z. - Educational administrator, Ministry of Education, Malaysia)

Half way through the course, I began applying what I had learned in my research work, in particular, by using such principles as "local quality", "preliminary counter-action" and "fragmentation". I was able to control the growing of the mushrooms. This has brought about mechanization of mushroom raising, the problem to which I had been looking for a solution. And now I have been able to find the answer. In addition, the size of a mushroom can be controlled to meet market demand. I have recently been conducting a number of experiments for which the results are satisfactory.

(N.H.D. - Agro-engineer)

I have known for many years that I didn't have an effective method in thinking. Faced with a problem, I found myself very slow in working out a solution, as compared to other people. I always had to grope about stepby step, feeling completely at a loss, not knowing what to do to solve the problem. I could not concentrate on anything, and often left things half done.

Now that the course is coming to an end, I found myself completely changed from what I was before. The lack of self-confidence and the inertia in my nature have given way to optimism, observation, and inquisitiveness. My mind has been sharpened and become more alert, enabling me to find the solution to a problem more quickly, effectively and economically. What I like most in the course is that for every point presented in a lesson, the instructor always gave us illustrations taken from daily life, besides mentioning the inventions in which the method was used. I also like his humanistic approach to teaching.

I regret not having been able to attend this course earlier, which made me waste a lot of my time. The subject is necessary for everybody, and should be included in the curriculum for high schools.

(N.T.T.T. – University Student)

Dung, 2000, pp. 1-4

From the participants' evaluation we can learn that all of them value the CSTC program very much and thought what they learned in the program brought a new view toward life.

Integrating Educational Ideal and Creativity

In his keynote speech *Enlarging TRIZ and Teaching Enlarged TRIZ for the Large Public* delivered at the 3rd International Conference on TRIZ Studies in March 25-27, 2001 in Los Angles, Professor Phan Dung stated H.G. Wells' remarks that "human history becomes more and more a race between education and catastrophe." Then he said:

> As a teacher in education I am keenly aware of this challenge and, of course, I would like to contribute as much as possible to the victory of education. But what education does to beat catastrophe?
>
> There are many definitions of human beings. One of them is that human beings are thinking creatures. But from possessing thinking ability to knowing how to think well is a long distance. Many writers suppose that a great number of tragedies at personal, group even national and global levels have deep causes through inadequate thinking skills for solving related problems.
>
> Today, many educators including myself have shared the thought of Jim Killian, the former president of Massachusetts Institute of Technology, "The basic aim of education is not to accumulate knowledge, but rather to learn to think creatively, teach oneself and seek answers to questions as yet unexplored." In my turn I would like to add, "And to put creative ideas into action."
>
> On the basis of our own experiences in using TRIZ for solving different kinds of problems and teaching TRIZ for large public irrespective of age, profession and position for more than 25 years we believe that TRIZ itself, in all senses can be the core of such a theory. In our vision, TRIZ based general theory of creative problem solving will help education to beat catastrophe"
>
> Phan, 2001, pp. 2-3

In his article *Dialectical Systems Thinking for Problem Solving and Decision Making* presented in the 7th International Conference on Thinking, June 1-6, 1997, Professor Phan Dung states the need to foster creativity in current education system.

> There are three areas: nature, society and thinking that should be understood and transformed by mankind in order to meet its needs during its history of evolution and development. Unfortunately, among them, thinking had received the least attention until recently. This situation has caused a great number of tragedies at personal, group, national, and even global levels.

Our present educational and training system mainly prepares specialists. As a result of that, these specialists having such a narrow thinking may successfully solve their specialized problems but may not know how to think to solve other problems. Life will be happy if problems in general can be solved well.

In fact, the reality is in unity and interactions between its components and changes quantitatively and qualitatively with time. First of all, thinking, on the one hand, should obey the inherent universal attributes and developmental laws of the reality. On the other hand, thinking should put forward ideas for further cognizing and transforming the reality, which are based on these universal attributes and laws, taking into account specific points of concrete problems.

The essence of the issue is that only those people who grasp these objective laws of development and manage the psychology along them can achieve a high efficiency in creativity and innovation.

In Professor Phan Dung's view, TRIZ based its philosophical foundation on dialectical thinking and, directed by systems theory, draws widely from psychology of creativity, cybernetics, information theory, decision making theory and predicting method on one side, and patent information, evaluation and development of biological systems, history of science and technological development, scientific effects needed for inventors, and criticizing other creativity methodologies on the other side forms the enlarged system for enlarged public to solve complex, dynamic, and challenging problems from all aspects of life (See figure 6 Sources of TRIZ).

Sources of TRIZ

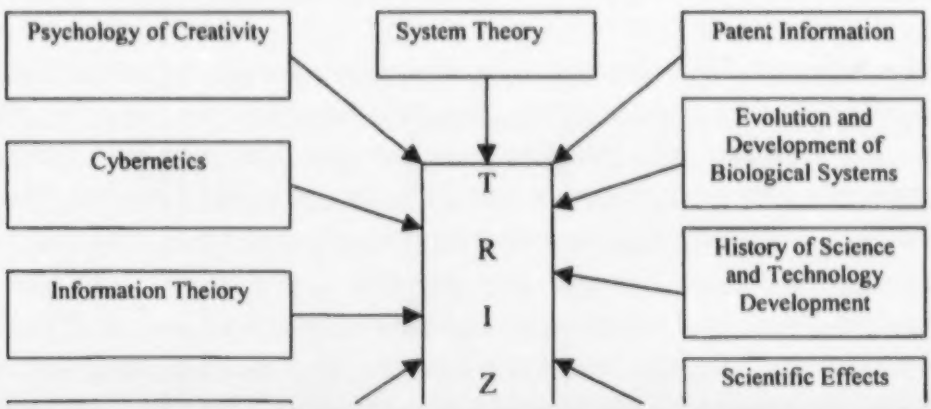

Figure 6 Sources of TRIZ (Dung, 2001, p. 5)

From Thematic Synthesis to Conceptual Portrayal of Holistic Educators

From the very early stage of my study, the framework I wanted to use to explore people's journeys constitutes four dimensions: how holistic educators integrate their knowing, doing, being and becoming. Since I could not find an established theoretical underpinning of the four-dimensional framework, I always kept it at the back of my mind. I did find Parker Palmer's (1983) mentioning of the four basic issues to the life of the mind relevant to my four dimensions: epistemology, pedagogy, ontology and ethics. I could see the rough correspondence between these four issues and the knowing, doing, being and becoming. Yet I could not see clearly, at the time, what is inside each dimension and how these four should be related and interacted.

Eventually I was at the planning stage of writing the last chapter of my dissertation, after I had reviewed all the thematic patterns of both of the cases and all of the participants the previous night. Surprisingly, the next morning, before I even fully woke up, all the themes fell very neatly into these four dimensions in my mind's eye—it was a sudden "Aha!" experience. I was so excited

with the emergence of the clear picture of the relationships of the themes right there in front of my mind's eye that I got up right away and quickly drew the diagram. This diagram unfolded clearly as the conceptual portrayal of all the participants and at the same time it illustrates comprehensive dimensions of holistic educators (See figure 7, and for detailed explanation of the diagram please check the author's dissertation, Fan, 2002).

The salient themes and patterns emerged from cross-case synthesis evolved and unfolded to be an interwoven web of knowing, doing, being and becoming. When this web displayed in a two dimensional form it depicts four most important dimensions of holistic educators: 1) the integrated knowing of the self, the subject, the students and the world; 2) the harmonious doing to create nurturing learning environment; 3) the genuine being to serve as authentic modeling; 4) the ever-evolving becoming that seeks deeper meaning and larger purpose of life.

Portrayal of Integral Educators

Figure 7. Portrayal of Integral Educators, developed 7.29.2001

When we twitch the web to a three-dimensional spiral it portrays the dynamic, evolving, uplifting and transcending nature of the journey of holistic educators, where the entire four elements merge into an ultimate oneness that represents the essence of holistic educators (See Figure 8).

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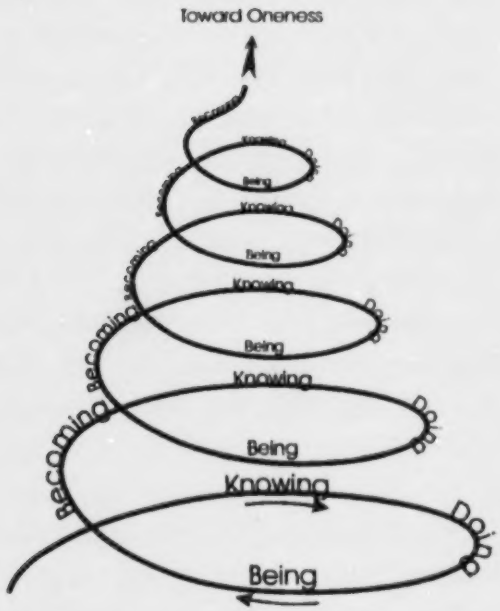

Figure 8. Dynamic journeys of integral educators toward oneness

As Mario Solis suggests in my interview with him that, "in a deep sense, my capacity as an educator comes from my choice to allow life to unfold through me and to demonstrate from my entire being."

The entire study manifests that when educators' entire being lives their knowing and strives for the becoming, namely, a higher purpose and deeper meaning of life, the vision, mission are not empty words on paper but rather a reality of life that they have created as the result of drawing from all the energy and resources from the creative, implicate order of life. The insight of the journey of the holistic educators is about touching the higher values of themselves, allowing people to manifest the excellence within themselves, and in turn allowing others to manifest their inner resources, creativity and excellence. The study demonstrates how they have successfully created a caring, nurturing, and nourishing learning environment where loving for life, learning to live and to create, living to transcend, appreciating relationship, and how educating for peace are modeled and fostered.

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